

# Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.



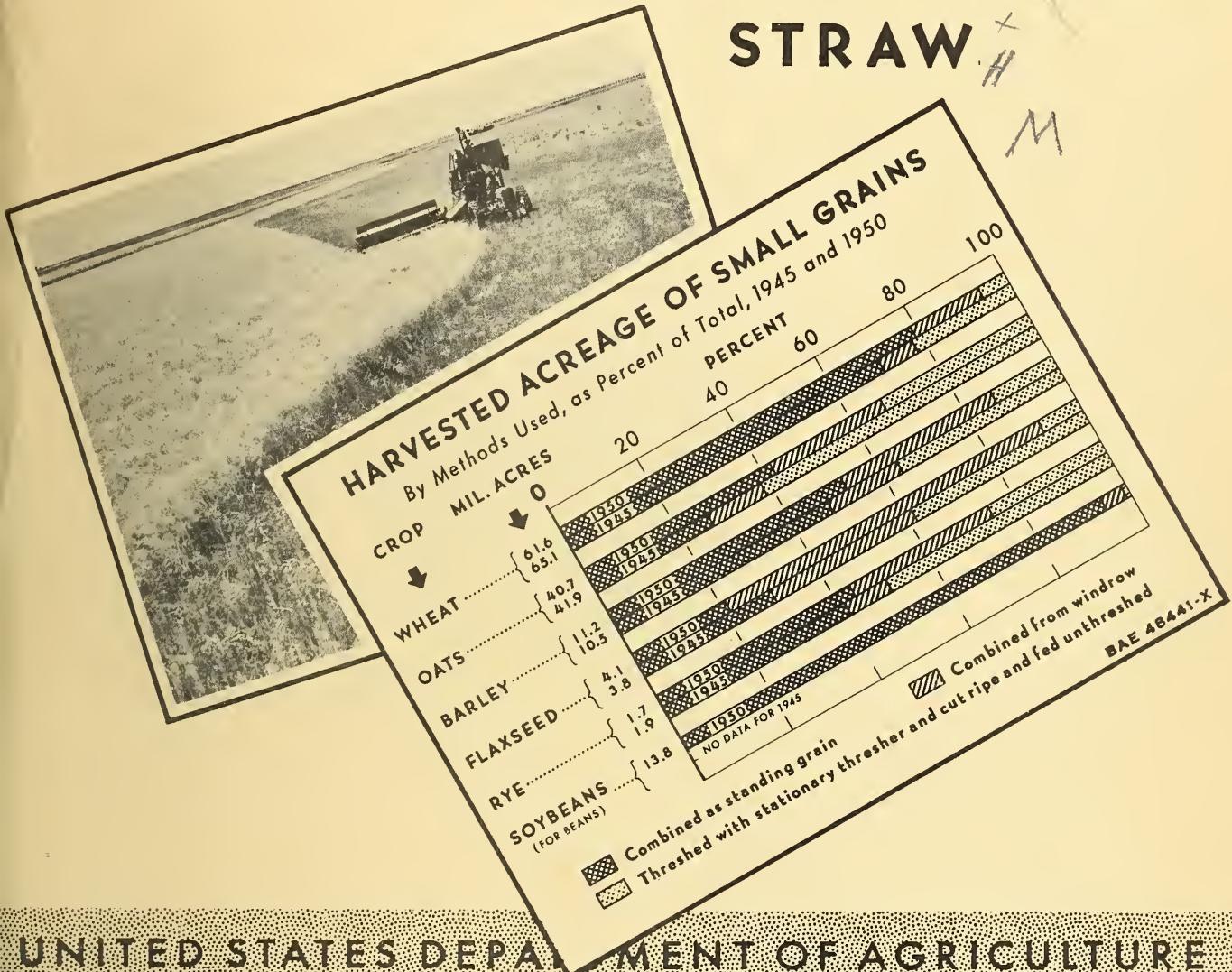
serve  
941  
F22

# Harvesting

## SMALL GRAINS AND SOYBEANS

and

### METHODS OF SAVING STRAW



UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF AGRICULTURAL ECONOMICS  
WASHINGTON, D. C.

MARCH 1952

## SOURCE OF MATERIAL

The data in this report on methods of harvesting small-grain crops and soybeans and saving straw were obtained from the voluntary crop reporters of the United States Department of Agriculture in February 1951. A mailed questionnaire was used. More than 25,000 farms were covered in the study. Information was obtained on individual farms concerning the acreage of wheat, oats, barley, rye, flaxseed and soybeans for beans in 1950 combined as standing grain, combined from the windrow, threshed from the stack, shock, etc. and cut ripe and fed unthreshed. For each of the crops, the crop correspondents reported the tons of straw baled with wire balers, baled with twine balers, and chopped, as well as the number of tons of long, loose straw saved for feed and bedding, or for sale.

The material from the crop correspondents was tabulated and summarized by crop-reporting districts. Grain harvested by different methods, yield per acre of straw saved and percentage of straw handled by different methods were then calculated for each crop. State estimates for each crop were then developed from the crop-reporting district figures by using appropriate acreage weights. On the farms included in the survey, about 1,130,000 acres of wheat, 420,000 acres of oats, 240,000 acres of barley, 54,000 acres of flaxseed, 31,000 acres of rye, and 125,000 acres of soybeans for beans were harvested in 1950.

For purposes of comparison, this report also contains estimates on harvesting methods and utilization of straw for wheat, oats, barley, rye and flaxseed in 1945 and for wheat and oats in 1938. The data for 1945 were obtained from crop reporters in February 1946. The 1938 estimates are based largely on information supplied by crop correspondents in February 1939. In both the 1945 and the 1938 studies, crop correspondents supplied estimates for their localities. Thus, the harvest estimates for these years are judgment estimates of the proportion of acreage harvested by specified methods.

The estimate of the tons of straw saved for use on the farm or for sale in 1945 is a computed figure. Crop correspondents reported the percentage of the recoverable straw that was used or sold as baled straw, used or sold as loose straw, and the percentage left in the field or otherwise not utilized. Details of the method used in developing the straw estimate of 1945 are available in the BAE report F.M. 66, "Harvesting Small Grains and Utilization of the Straw."

HARVESTING SMALL GRAINS AND SOYBEANS AND METHODS  
OF STORING STRAW

1895  
By Albert P. Brodell, Agricultural Economist,  
Paul E. Strickler, Agricultural Economist,  
and  
Donald D. Pittman, Agriculture Statistician

CONTENTS

	Page		Page
Introduction. . . . .	1	Small-grain straw. . . . .	13
Harvesting small grains . . . . .	1	Wheat straw. . . . .	15
Wheat . . . . .	2	Oat straw. . . . .	17
Oats . . . . .	5	Barley straw . . . . .	17
Barley . . . . .	7	Rye straw. . . . .	20
Rye . . . . .	7	Flaxseed straw . . . . .	20
Flaxseed. . . . .	10	Soybean straw. . . . .	20
Harvesting soybeans for beans .	10		

INTRODUCTION

The harvested acreage of wheat, oats, barley, rye, and flaxseed in 1950 was about 119,300,000 acres. This was the lowest harvested acreage since 1944. It was slightly below the average harvested acreage of 1940-49, but was about 14 million acres below the record acreage of 1949. The 13.8 million acres of soybeans harvested for beans in 1950 exceeded the previous high acreage of 1947 by more than 2.5 million acres, or by about 23 percent.

HARVESTING SMALL GRAINS

The 1950 study provides details of harvest methods for the five small grain crops listed above. Crop reporters in February 1951 provided information concerning the acreage of these crops combined as standing grain, combined from the windrow, threshed from the shock, stack, barn, etc., as well as the acreage cut ripe and fed unthreshed. In the 1945 study, the acreage cut and fed unthreshed was included with the acreage threshed from the shock, stack, barn, etc.

The combine method continues to increase in favor. In 1950, about 84 percent of the total acreage of the five small grains was combined compared with about 63 percent in 1945. Most of the combining in both 1950 and 1945 was as standing grain. This method was used to harvest about 61 percent of the 1950 acreage and about 52 percent of the 1945 acreage.

Combining from the windrow is an important harvest method especially in the North Central States, but it is reported to some extent in most other sections of the country. Of the five crops, about 22 percent of the total harvested acreage was combined from the windrow in 1950 and about 11 percent in 1945 (table 1).

About 15 percent of the 1950 acreage of the five small-grain crops was threshed from the shock, stack, barn, etc., and about 2 percent was cut ripe and fed unthreshed. Taken together these two methods accounted for 17 percent of the 1950 acreage and about 37 percent of the 1945 acreage.

Most of the 1950 acreage that was threshed from the shock, stack, barn, etc., was cut with grain binders and threshed with stationary threshers. However, in some sections of the country small acreages of grain are threshed from the shock with combines. Although details concerning the machines used for harvesting the acreage that was cut ripe and fed unthreshed in 1950 are not available, it is believed that practically all of this acreage was cut with mowers or grain binders.

Changes in methods of harvesting small grains reflect to a considerable extent changes in numbers of the principal harvest machines. About 800,000 combines and 875,000 grain binders were available for the 1950 harvest. The 1950 number of combines was about double the number available for the 1945 harvest and about four times the number available for the 1940 harvest.

On the other hand, the number of grain binders available for the 1950 harvest was the smallest in years and at least 500,000 below the number available for the 1940 harvest. Further, many of the 1950 grain binders were more than 20 years old as but few binders have been bought in recent years. Many of the binders on farms were not used in 1950.

#### HARVESTING WHEAT

For the entire country, 94 percent of the wheat acreage of 1950 was harvested with the combine either as standing grain or from the windrow. In 1945, about 78 percent of the wheat acreage was harvested with combines and in 1938 less than half of the acreage was harvested with combines. The combine method was used to harvest more than 95 percent of the wheat acreage of Kansas, Nebraska, Oklahoma, Texas, Illinois, each of the three Pacific Coast States, and most of the Mountain States (table 2).

Combining as standing grain was the leading method of harvesting; it accounted for about 79 percent of the 1950 wheat acreage. In 1945, around 70 percent of the acreage of wheat was combined as standing grain. About 15 percent of the 1950 acreage and about 8 percent of the 1945 acreage were harvested with combines from the windrow. In 1950, this method of harvest was reported in most States and in Minnesota, North Dakota, and South Dakota, it was the leading method. Information concerning the acreage of wheat combined from the windrow was not obtained in the southern States in 1945. Combining from the windrow in 1950 accounted for only a small percentage of the wheat acreage in the southern States.

Table 1.- Percentage of small-grain crops harvested by specified methods, 1950 and 1945 crops 1/

State and group	1950 harvested acreage	Percentage distribution of acreage							
		1950 crop				1945 crop			
		Combined		Threshed		Combined		Threshed	
		As standing	From windrow	from shock, stack, etc.	Cut ripe and fed unthreshed	As standing	From windrow	shock, stack, etc., and cut ripe and fed	unthreshed
Northeast	1,000 acres	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent
New England	147	51.6	1.0	28.3	19.1	22.3	.1	77.6	
New York	1,223	70.0	1.2	24.7	4.1	38.5	.2	61.3	
New Jersey	150	91.2	.4	4.6	3.8	83.4	.1	16.5	
Pennsylvania	1,791	68.8	.9	29.1	1.2	32.7	.2	67.1	
Delaware	98	89.7	.6	8.6	1.1	63.7	.1	36.2	
Maryland	423	68.3	.2	30.7	.8	33.5	--	66.5	
Total	3,832	69.8	.9	26.4	2.9	36.5	.2	63.3	
Corn Belt									
Ohio	3,295	89.1	.9	9.6	.4	64.3	1.0	34.7	
Indiana	2,949	90.4	2.7	6.0	.9	67.4	3.2	29.4	
Illinois	5,306	77.1	16.3	5.9	.7	55.2	15.8	29.0	
Iowa	6,913	37.4	36.7	25.0	.9	18.7	22.1	59.2	
Missouri	3,058	68.2	2.4	25.6	3.8	39.4	2.1	58.5	
Total	21,521	66.7	16.7	15.4	1.2	46.0	11.0	43.0	
Lake States									
Michigan	2,738	75.2	3.8	19.9	1.1	54.5	1.6	43.9	
Wisconsin	3,331	31.3	9.6	58.2	.9	13.1	1.1	85.8	
Minnesota	8,659	4.7	60.8	34.2	.3	2.2	20.4	77.4	
Total	14,728	23.8	38.6	37.0	.6	14.7	12.3	73.0	
Great Plains									
North Dakota	15,301	17.1	69.6	12.7	.6	24.4	36.5	39.1	
South Dakota	8,711	19.0	57.1	22.2	1.7	13.6	29.5	56.9	
Nebraska	7,234	72.1	8.4	18.0	1.5	52.1	3.5	44.4	
Kansas	13,560	97.0	.9	1.7	.4	91.8	.6	7.6	
Total	44,836	50.5	36.5	12.1	.9	47.9	18.9	33.2	
Appalachian									
West Virginia	135	30.8	.2	51.9	17.1	2/ 3.2	--	96.8	
Kentucky	441	58.5	.9	27.5	13.1	2/ 37.1	--	62.9	
Tennessee	567	61.9	.9	28.4	8.8	2/ 36.7	--	63.3	
Virginia	624	54.3	.2	38.8	6.7	2/ 25.7	--	74.3	
North Carolina	817	76.8	.6	9.4	13.2	2/ 57.3	--	42.7	
Total	2,584	62.6	.6	26.0	10.8	2/ 37.9	--	62.1	
Southeast									
South Carolina	811	65.8	1.9	8.1	24.2	2/ 44.4	--	55.6	
Georgia	593	71.2	.2	4.1	21.5	2/ 45.2	--	54.8	
Florida	16	47.0	--	3.0	50.0	2/ 52.0	--	48.0	
Alabama	124	63.9	.7	3.4	32.0	2/ 44.7	--	55.3	
Total	1,584	67.5	1.1	6.2	25.2	2/ 44.9	--	55.1	
Delta									
Mississippi	178	83.4	2.9	1.1	12.6	2/ 67.1	--	32.9	
Louisiana	48	64.0	2.0	13.0	21.0	2/ 60.0	--	40.0	
Arkansas	202	63.2	.9	22.3	13.6	2/ 36.6	--	63.4	
Total	428	71.7	1.9	12.4	14.0	2/ 55.3	--	44.7	
Oklahoma-Texas									
Oklahoma	5,325	94.5	1.4	2.8	1.3	2/ 81.8	--	18.2	
Texas	4,046	86.4	4.7	5.5	3.4	2/ 83.5	--	16.5	
Total	9,371	91.0	2.8	4.0	2.2	2/ 82.7	--	17.3	
Mountain									
Montana	6,306	85.5	6.9	6.0	1.6	80.8	3.0	16.2	
Idaho	1,992	92.3	1.8	5.4	.5	67.5	.9	31.6	
Wyoming	657	82.7	2.8	11.4	3.1	53.6	2.9	43.5	
Colorado	3,021	91.5	1.8	5.6	1.1	63.4	1.3	35.3	
New Mexico	232	90.8	1.7	4.7	2.8	81.5	.3	18.2	
Arizona	208	94.6	--	3.2	2.2	88.0	1.9	10.1	
Utah	606	86.8	.3	11.5	1.4	50.3	.1	49.6	
Nevada	50	92.2	--	3.2	4.6	85.7	--	14.3	
Total	13,072	88.2	4.2	6.2	1.4	72.2	2.0	25.8	
Pacific									
Washington	3,066	95.6	.7	2.3	1.4	90.0	.2	9.8	
Oregon	1,657	92.0	4.0	2.4	1.6	89.4	1.5	9.1	
California	2,677	97.3	1.0	.5	1.2	95.0	3.3	1.7	
Total	7,400	95.4	1.5	1.7	1.4	91.6	1.6	6.8	
United States	119,316	61.4	22.3	14.5	1.8	51.9	10.7	37.4	

1/ Includes wheat, oats, barley, rye, and flaxseed.

2/ Includes acreage combined from windrow.

Table 2.- Wheat harvested by specified methods, by States, 1950, 1945 and 1938 crops

State and group	1950 acreage standing: grain	Percentage distribution of acreage									
		1950 crop					1945 crop				
		Combined	As	From	Threshed	Cut	Combined	As	From	Threshed	Combined:Har- vested
Northeast	1,000	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent
New England	acres	cent	cent	cent	cent	cent	cent	cent	cent	cent	cent
New York	406	88.0	2.0	10.0	-	47.9	.1	52.0	-	11	89
New Jersey	78	95.0	.5	3.5	1.0	86.9	.1	13.0	-	24	76
Pennsylvania	863	73.0	1.0	26.0	-	34.8	.2	65.0	-	6	94
Delaware	60	89.0	1.0	9.7	.3	61.0	-	39.0	-	11	89
Maryland	279	66.0	-	33.7	.3	35.0	-	65.0	-	3	97
Total	1,686	77.0	1.1	21.8	.1	40.2	.1	59.7	2/ 8	2/ 92	
Corn Belt	:	:	:	:	:	:	:	:	:	:	:
Ohio	2,118	89.6	.3	10.0	.1	65.6	.4	34.0	-	22	78
Indiana	1,533	93.5	1.5	5.0	-	73.0	1.0	26.0	-	30	70
Illinois	1,417	96.0	.9	3.0	.1	80.0	1.0	19.0	-	44	56
Iowa	250	82.0	9.0	9.0	-	47.0	10.0	43.0	-	28	72
Missouri	1,359	84.2	.6	15.0	.2	51.0	1.0	48.0	-	22	78
Total	6,677	90.5	1.1	8.3	.1	67.0	1.0	32.0	-	29	71
Lake States	:	:	:	:	:	:	:	:	:	:	:
Michigan	1,141	84.0	1.5	14.4	.1	62.0	1.0	37.0	-	16	84
Wisconsin	86	41.0	14.5	44.4	.1	19.0	1.0	80.0	-	3	97
Minnesota	927	2.3	74.5	23.1	.1	2.0	26.0	72.0	-	6	94
Total	2,154	47.2	33.4	19.3	.1	30.0	13.9	56.1	-	8	92
Great Plains	:	:	:	:	:	:	:	:	:	:	:
North Dakota	8,942	22.0	68.0	10.0	-	31.0	35.0	34.0	-	23	77
South Dakota	3,359	34.0	56.0	9.9	.1	26.0	33.0	41.0	-	19	81
Nebraska	4,051	95.0	1.0	4.0	-	77.0	2.0	21.0	-	51	49
Kansas	12,280	99.0	.5	.5	-	95.6	.4	4.0	-	82	18
Total	28,632	66.8	28.1	5.1	-	64.8	15.4	19.8	-	55	45
Appalachian	:	:	:	:	:	:	:	:	:	:	:
West Virginia	66	35.0	-	63.0	2.0	3/ 4.0	-	96.0	-	1	99
Kentucky	248	65.0	.5	32.5	2.0	3/ 43.0	-	57.0	-	8	92
Tennessee	244	64.0	.2	35.3	.5	3/ 37.0	-	63.0	-	6	94
Virginia	376	57.0	-	42.3	.7	3/ 29.0	-	71.0	-	3	97
North Carolina	356	87.0	.5	11.8	.7	3/ 69.0	-	31.0	-	11	89
Total	1,290	67.0	.3	31.7	1.0	3/ 42.1	-	57.9	-	6	94
Southeast	:	:	:	:	:	:	:	:	:	:	:
South Carolina	141	89.0	2.0	8.3	.7	3/ 74.0	-	26.0	-	8	92
Georgia	108	93.0	.3	5.2	1.5	3/ 71.0	-	29.0	-	11	89
Alabama	11	89.0	3.0	7.0	1.0	3/ 74.0	-	26.0	-	22	78
Total	260	90.7	1.3	7.0	1.0	3/ 72.7	-	27.3	-	10	90
Delta	:	:	:	:	:	:	:	:	:	:	:
Mississippi	6	95.0	-	4.0	1.0	3/ 90.0	-	10.0	-	-	-
Arkansas	18	58.0	-	40.0	2.0	3/ 50.0	-	50.0	-	12	88
Total	24	67.3	-	31.0	1.7	3/ 62.0	-	38.0	-	12	88
Oklahoma-Texas	:	:	:	:	:	:	:	:	:	:	:
Oklahoma	4,707	99.5	.1	.3	.1	3/ 91.0	-	9.0	-	70	30
Texas	2,374	94.3	4.0	1.5	.2	3/ 93.0	-	7.0	-	82	18
Total	7,081	97.8	1.4	.7	.1	3/ 92.0	-	8.0	-	75	25
Mountain	:	:	:	:	:	:	:	:	:	:	:
Montana	4,953	91.0	6.0	2.9	.1	85.0	2.0	13.0	-	55	45
Idaho	1,342	95.0	1.2	3.7	.1	69.0	1.0	30.0	-	40	60
Wyoming	348	95.0	.4	4.5	.1	65.0	2.0	33.0	-	32	68
Colorado	2,314	98.0	.5	1.4	.1	70.0	1.0	29.0	-	44	56
New Mexico	172	97.0	.5	1.0	1.5	90.0	.1	9.9	-	80	20
Arizona	28	99.0	-	1.0	-	95.0	-	5.0	-	93	7
Utah	408	93.5	-	6.5	-	55.0	-	45.0	-	41	59
Nevada	17	99.0	-	1.0	-	92.0	-	8.0	-	63	37
Total	9,582	93.7	3.4	2.8	.1	77.9	1.5	20.6	-	50	50
Pacific	:	:	:	:	:	:	:	:	:	:	:
Washington	2,621	98.5	.1	1.0	.4	92.8	.2	7.0	-	83	17
Oregon	952	98.0	1.0	.6	.4	93.2	.8	6.0	-	78	22
California	651	99.4	-	.5	.1	98.4	.6	1.0	-	95	5
Total	4,224	98.5	.3	.8	.4	93.7	.4	5.9	-	84	16
United States	61,610	79.0	15.1	5.8	.1	70.6	7.8	21.6	2/49	51	

1/ No information obtained.

2/ Average of reporting States.

3/ Includes acreage combined from windrow.

In 1938, slightly more than half of the wheat acreage was threshed with stationary threshers from the shock, stack, barn, etc., or cut ripe and fed unthreshed. In 1945 about 22 percent of the acreage was harvested in this way. Since 1945 use of the stationary-thresher method has further declined and only 6 percent of the 1950 acreage was threshed with stationary threshers or cut ripe and fed unthreshed. The stationary-thresher method was the leading method only in West Virginia.

It was relatively important in Pennsylvania, Maryland, Wisconsin, Minnesota, and in most Appalachian States, where in 1950 it accounted for around a fourth or more of the wheat acreage.

According to reports of the crop correspondents, about one-tenth of one percent of the wheat acreage of 1950 was cut ripe and fed unthreshed. This method of harvesting was relatively more important in the South than elsewhere.

#### HARVESTING OATS

A total of 40.7 million acres of oats was harvested for grain in 1950. This acreage was exceeded in the last decade only in 1945 and 1946. Use of the combine for harvesting oats has greatly increased during recent years. In 1950, about two-thirds of the acreage was combined as standing grain or from the windrow. Only 10 percent of the harvested acreage of 1938 and about 38 percent of the 1945 acreage was harvested with combines (table 3). In each of the important oat-producing States, except Wisconsin, combines were used to harvest more than half of the 1950 acreage. In several of the Appalachian States and in Florida, where a large percentage of the 1950 acreage was cut and fed unthreshed, combines were used to harvest less than half of the oat acreage.

Combining as standing grain has become the leading method of harvesting oats. About 42 percent of the acreage of 1950 was harvested in this way. Only 26 percent of the acreage of 1945 was harvested by this method.

Combining from the windrow accounted for about 25 percent of the acreage of 1950. In 1945, only 12 percent of the acreage of the States reporting was combined from the windrow. According to reports from crop correspondents, some oats were combined from the windrow in practically all States, but in the Northeastern States, the eastern Corn Belt and the South, this method of harvesting accounted for only a small percentage of the acreage of oats. It was, however, the leading method of harvesting in the important oat-producing States of Iowa, Minnesota, North Dakota, and South Dakota, accounting for more than half of the acreage of Minnesota, North Dakota, and South Dakota.

Until recent years, the great bulk of the oat crop has been harvested with stationary threshers from the shock, stack, or barn. But, in 1950, only about 28 percent of the acreage was harvested by this method.

Table 3.- Oats harvested by specified methods, by States, 1950, 1945 and 1938 crops

State and group		Percentage distribution of acreage									
		1950 crop			1945 crop			1938 crop			
		Combined	Combined	Combined	Threshed	Cut	from shock	as stack, etc.	standing	by all methods	Harvested from shock, and fed
		harvested	As	From	from	ripe	As	From	stack, etc.	standing	grain
		acreage	standing	windrow	shock,	and fed	standing	windrow	and cut ripe	by all	other
		grain	row	stack,	and fed	standing	grain	row	and fed	methods	grain
				etc.	threshed:				unthreshed		windrow
Northeast		1,000	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-
		acres	cent	cent	cent	cent	cent	cent	cent	cent	cent
New England		140	52.0	1.0	27.0	20.0	21.9	0.1	78.0	1	1
New York		719	59.0	1.0	33.0	7.0	30.0	.2	69.8	5	95
New Jersey		39	83.5	.5	4.0	12.0	77.0	.2	22.8	18	82
Pennsylvania		733	62.0	.5	34.5	3.0	30.0	.2	69.8	4	96
Delaware		8	87.0	-	7.0	6.0	60.0	-	40.0	5	95
Maryland		47	56.0	2.0	37.0	5.0	19.0	.2	80.8	2	98
Total		1,686	60.3	.8	32.5	6.4	30.4	.2	69.4	2/ 5	2/ 95
Corn Belt											
Ohio		1,118	88.0	2.0	9.0	1.0	62.0	2.0	36.0	14	86
Indiana		1,335	87.0	4.0	7.0	2.0	61.0	6.0	33.0	20	80
Illinois		3,796	70.0	22.0	7.0	1.0	45.0	22.0	33.0	22	78
Iowa		6,520	36.0	37.0	26.0	1.0	18.0	22.0	60.0	8	92
Missouri		1,587	51.0	4.0	35.0	7.0	29.0	3.0	68.0	9	91
Total		14,356	55.8	23.6	18.9	1.7	35.1	16.2	48.7	13	87
Lake States											
Michigan		1,415	71.0	4.0	23.0	2.0	50.0	2.0	48.0	9	91
Wisconsin		2,924	30.0	9.0	60.0	1.0	13.0	1.0	86.0	3	97
Minnesota		5,101	5.5	51.0	43.0	.5	2.0	17.0	81.0	3	97
Total		9,440	22.9	30.9	45.3	.9	12.6	9.9	77.5	4	96
Great Plains											
North Dakota		2,084	5.0	61.0	30.0	4.0	7.0	35.0	58.0	6	94
South Dakota		3,311	8.0	51.0	37.0	4.0	4.0	24.0	72.0	2	98
Nebraska		2,649	39.0	18.0	39.0	4.0	19.0	6.0	75.0	6	94
Kansas		960	75.0	4.0	16.0	5.0	47.0	2.0	51.0	18	82
Total		9,004	23.6	38.6	33.7	4.1	13.0	20.2	66.8	8	92
Appalachian											
West Virginia		53	21.0	.5	38.5	40.0	3/ 2.0	-	98.0	2	98
Kentucky		99	32.0	1.0	16.0	51.0	3/ 15.0	-	85.0	3	97
Tennessee		239	53.0	2.0	25.0	20.0	3/ 30.0	-	70.0	5	95
Virginia		139	47.0	1.0	25.0	27.0	3/ 14.0	-	86.0	4	96
North Carolina		410	68.0	.5	6.5	25.0	3/ 14.0	-	56.0	12	88
Total		940	54.6	1.0	16.8	27.6	3/ 29.6	-	70.4	7	93
Southeast											
South Carolina		647	60.0	2.0	8.0	30.0	3/ 35.0	-	65.0	7	93
Georgia		477	66.0	.2	3.8	30.0	3/ 38.0	-	62.0	7	93
Florida		16	47.0	-	3.0	50.0	3/ 52.0	-	48.0	1/	1/
Alabama		113	61.5	.5	3.0	35.0	3/ 42.0	-	58.0	10	90
Total		1,253	62.3	1.1	5.9	30.7	3/ 37.7	-	62.3	2/ 8	2/ 92
Delta											
Mississippi		172	83.0	3.0	1.0	13.0	3/ 66.0	-	34.0	23	77
Louisiana		48	64.0	2.0	13.0	21.0	3/ 60.0	-	40.0	26	74
Arkansas		180	64.0	1.0	20.0	15.0	3/ 35.0	-	65.0	4	96
Total		400	72.2	2.0	11.0	14.8	3/ 54.8	-	45.2	13	87
Oklahoma-Texas											
Oklahoma		532	51.0	12.0	25.0	12.0	3/ 32.0	-	68.0	10	90
Texas		1,324	69.0	7.0	14.0	10.0	3/ 55.0	-	45.0	18	82
Total		1,856	63.8	8.4	17.2	10.6	3/ 46.4	-	53.6	14	86
Mountain											
Montana		423	34.0	10.0	36.0	20.0	44.0	3.0	53.0	10	90
Idaho		222	78.5	1.5	16.0	4.0	54.0	1.0	45.0	25	75
Wyoming		152	61.0	7.0	22.0	10.0	35.0	4.0	61.0	7	93
Colorado		190	48.0	9.0	30.0	13.0	25.0	1.0	74.0	7	93
New Mexico		28	42.0	10.0	23.0	25.0	40.0	-	60.0	15	85
Arizona		10	70.0	-	-	30.0	65.0	-	35.0	22	78
Utah		52	51.0	-	38.0	11.0	33.0	-	67.0	6	94
Nevada		9	80.0	-	-	20.0	80.0	-	20.0	47	53
Total		1,086	51.0	7.0	28.1	13.9	39.9	2.0	58.1	12	88
Pacific											
Washington		172	56.0	9.0	22.0	13.0	53.0	1.0	46.0	35	65
Oregon		344	75.0	15.0	5.0	5.0	75.0	5.0	20.0	37	63
California		196	80.0	9.0	1.0	10.0	83.0	7.0	10.0	1/	1/
Total		712	71.8	11.9	8.0	8.3	71.6	4.6	23.8	2/ 36	2/ 64
United States		40,733	42.0	24.9	28.3	4.8	26.4	12.0	61.6	2/ 10	2/ 90

1/ No information obtained.

2/ Average of reporting States.

3/ Includes acreage combined from windrow.

About 5 percent of the oat acreage of 1950 was cut ripe and fed unthreshed. Some oats were harvested by this method in all of the States. It was relatively important in the South and in the Western States, where it accounted for 25 percent or more of the acreage in 11 States.

About a third of the oat acreage was threshed with stationary threshers or cut ripe and fed unthreshed in 1950, compared with about 62 percent of the oat acreage in 1945 and 90 percent in 1938.

#### HARVESTING BARLEY

The 1950 harvested acreage of barley of around 11.2 million acres was more than 10 percent below the average acreage of 1940-49, and about 34 percent below the record high acreage of 1942. Combines were used to harvest about 86 percent of the acreage in 1950. In 1945, about 64 percent of the acreage of barley was harvested with combines (table 4).

About 53 percent of the 1950 acreage was harvested with combines as standing grain, about a third was combined from the windrow, and about 14 percent was threshed with stationary threshers or cut and fed unthreshed. About 40 percent of the barley acreage of 1950 was in North Dakota, South Dakota, and Minnesota where combining from the windrow is the leading method of harvesting for barley and other small-grain crops. In Iowa, one of the less important barley-producing States, a large percentage of the barley crop is combined from windrow. About one-eighth of the barley acreage of 1950 was threshed with stationary threshers. This method of harvesting was reported in all States that produced barley. It was of above-average importance in the Lake States, the Northeast, and the Appalachian States. In general, only small acreages of barley were cut ripe and fed unthreshed. This method of harvesting accounted for only 0.6 percent of the total acreage harvested.

#### HARVESTING RYE

The acreage of rye harvested for grains has decreased, and the 1950 harvested acreage of about 1.7 million acres was the third lowest reported since 1881. It was about 25 percent of the record acreage of 1919, and 70 percent of the average acreage of 1940-49. Although small acreages of rye are harvested in most States, the Lake States and the Great Plains States together accounted for about 70 percent of the total harvested acreage of 1950.

About 75 percent of the rye acreage of 1950 was harvested with combines as standing grain or from the windrow. About a fourth of the 1950 acreage and about half of the 1945 acreage were threshed with stationary threshers or cut ripe and fed unthreshed (table 5).

Table 4.- Barley harvested by specified methods, by States, 1950 and 1945

State and group	1950 harvested acreage	Percentage distribution of acreage							
		1950 crop				1945 crop			
		Combined		Threshed		Combined		Threshed	
		As standing grain	From wind- row	from shock, stack, etc.	Cut ripe and fed unthreshed	As standing grain	From wind- row	from stack, etc., and cut ripe and fed un- threshed	from shock, stack, etc., and fed un- threshed
acres	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent
Northeast	1,000								
New York	81	72.0	~	28.0	~	56.8	0.2	43.0	
Pennsylvania	182	76.0	2.0	22.0	~	39.8	.2	60.0	
Maryland	85	80.0	~	20.0	~	29.9	.1	70.0	
Other	39	84.5	~	14.5	1.0	72.1	.1	27.8	
Total	387	76.9	.9	22.1	.1	46.1	.2	53.7	
Corn Belt									
Iowa	53	24.0	65.5	10.0	.5	35.0	15.0	50.0	
Missouri	80	76.0	2.0	21.0	1.0	43.0	1.0	56.0	
Other	92	75.8	14.6	9.4	.2	73.6	2.3	24.1	
Total	225	63.7	22.1	13.7	.5	60.8	2.0	37.2	
Lake States									
Michigan	115	50.0	21.0	29.0	~	52.0	2.0	46.0	
Wisconsin	219	44.0	18.0	38.0	~	14.0	2.0	84.0	
Minnesota	1,252	2.0	77.0	20.9	.1	1.0	27.0	72.0	
Total	1,586	11.3	84.8	23.8	.1	12.0	19.0	69.0	
Great Plains									
North Dakota	2,146	7.0	79.0	13.9	.1	10.0	45.0	45.0	
South Dakota	1,148	14.0	64.0	21.0	1.0	11.0	29.0	60.0	
Nebraska	310	59.0	21.5	18.0	1.5	45.0	3.0	52.0	
Kansas	254	90.0	5.0	4.5	.5	78.2	1.8	20.0	
Total	3,858	18.7	65.1	15.7	.5	20.7	31.2	48.1	
Appalachian									
Kentucky	73	69.0	2.0	27.0	2.0	1/ 37.0	-	63.0	
Tennessee	62	85.0	~	14.5	.5	1/ 56.0	-	44.0	
Virginia	89	53.0	~	46.0	1.0	1/ 26.0	-	74.0	
Other	49	74.3	.7	22.7	2.3	1/ 58.9	-	41.1	
Total	273	68.4	.6	29.6	1.4	1/ 45.1	-	54.9	
Southeast and Delta									
Oklahoma-Texas	26	81.2	~	15.6	3.2	1/ 62.3	-	37.7	
Oklahoma									
Texas	52	92.0	4.0	3.5	.5	1/ 85.0	-	15.0	
Total	125	98.0	1.0	1.0	-	1/ 88.0	-	12.0	
Mountain									
Montana	852	80.0	10.0	9.0	1.0	77.0	4.0	19.0	
Idaho	424	91.0	4.0	5.0	-	69.5	.5	30.0	
Wyoming	151	77.0	4.0	16.0	3.0	56.0	3.0	41.0	
Colorado	489	78.0	5.0	16.0	1.0	61.0	2.0	37.0	
Arizona	157	95.0	~	4.0	1.0	89.7	.3	10.0	
Utah	141	82.0	1.0	16.0	1.0	47.8	.2	52.0	
Other	51	93.1	1.0	4.4	1.5	70.0	1.3	28.7	
Total	2,265	82.9	5.9	10.2	1.0	67.4	2.3	30.3	
Pacific									
Washington	254	95.0	1.0	3.0	1.0	79.9	.1	20.0	
Oregon	337	94.0	1.0	4.0	1.0	92.5	.5	7.0	
California	1,765	98.5	.5	.5	.5	97.0	2.0	1.0	
Total	2,356	97.5	.6	1.3	.6	95.2	1.7	3.1	
United States	11,153	52.8	33.6	13.0	.6	48.0	15.7	36.3	

1/ Includes acreage combined from windrow.

Table 5.- Rye harvested by specified methods, by States, 1950 and 1945

State and group	1950 harvested: acreage	Percentage distribution of acreage						1945 crop Combined Cut ripe and fed unthreshed: standing stack, etc. grain	1945 crop Combined Cut ripe and fed unthreshed: standing stack, etc. grain	1945 crop Combined Cut ripe and fed unthreshed: standing stack, etc. grain			
		1950 crop			Combined								
		Combined	Threshed From windrow or stack, etc.	From shock or stack and cut	As standing or grain	From stack etc.	From windrow ripe and fed						
1,000 acres	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent			
73	87.8	-	11.7	0.5	-	48.2	0.2	-	51.6	-			
Northeast													
Corn Belt													
Indiana	57	85.0	6.0	8.9	.1	70.0	1.0	29.0	-	-			
Illinois	50	94.0	-	5.8	.2	69.0	1.0	30.0	-	-			
Other	76	80.4	5.9	13.7	-	49.8	1.6	46.6	-	-			
Total	183	85.6	4.3	10.0	.1	61.7	1.2	37.1	-	-			
Lake States													
Michigan	60	62.0	4.0	34.0	-	49.0	1.0	50.0	-	-			
Wisconsin	92	31.0	4.8	64.0	.2	12.0	1.0	87.0	-	-			
Minnesota	162	12.0	31.8	56.0	.2	3.0	14.0	83.0	-	-			
Total	314	27.1	18.6	54.1	.2	16.3	6.4	77.3	-	-			
Plains States													
North Dakota	220	9.0	76.0	14.9	.1	11.0	42.0	47.0	-	-			
South Dakota	420	11.0	67.0	21.0	1.0	16.0	32.0	52.0	-	-			
Nebraska	224	67.0	9.0	24.0	-	11.0	2.0	57.0	-	-			
Kansas	42	89.0	5.0	6.0	-	79.0	1.0	20.0	-	-			
Total	906	27.9	52.0	19.6	.5	32.0	17.6	50.4	-	-			
Appalachian	81	66.0	.5	30.0	3.5	36.2	-	63.8	-	-			
Southeast	9	69.3	-	7.7	3.0	56.9	-	43.1	-	-			
Oklahoma-Texas	59	95.9	2.1	1.0	1.0	82.2	-	17.8	-	-			
Mountain	59	75.7	2.3	12.8	9.2	67.2	1.2	31.6	-	-			
Pacific	46	61.9	2.3	10.3	25.5	80.0	.4	19.6	-	-			
United States	1,730	43.4	31.3	23.8	1.5	41.0	9.2	49.8	-	-			

Combining as standing grain was the leading method of harvesting it accounted for about 43 percent of the 1950 acreage. In 1945, 41 percent of the acreage was harvested by this method. Combining from the windrow has increased materially in recent years. In 1945, this method accounted for only 9 percent of the acreage, but in 1950 more than 30 percent of the acreage was harvested in this way. Combining from the windrow accounted for about 70 percent of the total harvested rye acreage of North Dakota and South Dakota. These States had 37 percent of the total harvested acreage of rye in 1950.

About 24 percent of the harvested rye acreage of 1950 was threshed with stationary threshers. More than half of the acreage of Minnesota and Wisconsin was harvested by this method. Use of the stationary-thresher method was also of above-average importance in Michigan and in the Appalachian States. About 2 percent of the 1950 harvested acreage of rye was cut and fed unthreshed. This method of harvesting was relatively important in some of the Western States.

#### HARVESTING FLAXSEED

The harvested acreage of flaxseed in 1950 was about 4.1 million acres. This exceeded the acreage harvested in any year before 1942. It was, however, only slightly higher than the average acreage of 1940-49, but about 28 percent below the record acreage of 1943. Production of flaxseed is concentrated in North Dakota, Minnesota, and South Dakota, which together had about 89 percent of the harvested acreage of 1950. In 1950, combining from the windrow was the leading method of harvesting in these three States and in Iowa. About 70 percent of the total harvested acreage of flaxseed was combined from the windrow. This was a sharp increase from 1945 when less than a third of the acreage was combined from the windrow. More than 90 percent of the acreage of flaxseed in 1950 was harvested with combines. Only 62 percent of the acreage in 1945 was harvested with combines (table 6). The stationary-thresher method accounted for about 38 percent of the 1945 flaxseed acreage and about 9 percent of the 1950 acreage.

#### HARVESTING SOYBEANS FOR BEANS

The acreage of soybeans harvested for beans in 1950 exceeded the previous high acreage of 1947 by about 2,600,000 acres, or 23 percent. It was about 48 percent above the average harvested acreage of 1940-49. Soybeans for beans are harvested in 30 States, but the 5 Corn Belt States and Minnesota together had 80 percent of the harvested acreage of 1950.

Combines were used for harvesting about 99 percent of the 1950 acreage that was harvested for beans. Harvesting with combines as standing crop was the leading method and accounted for about 95 percent of the total acreage (table 7). Combining from the windrow was of above average importance in Minnesota, North Dakota and South Dakota, where more than 20 percent of the acreage was harvested in this way. Harvesting with stationary threshers accounted for less than one percent of the total 1950 acreage.

Table 6.- Flaxseed harvested by specified methods, by States, 1950 and 1945

State	1950 harvested:	Percentage distribution of acreage					
		1950 crop			1945 crop		
		Combined	As standing:	From grain	Combined	Threshed with: stationary thresher	Combined
	1,000 acres	Per- cent	Per- cent	Per- cent	As standing	From grain	From windrow
Iowa	77	11	84	5	13	53	34
Minnesota	1,217	5	79	16	4	30	66
North Dakota	1,909	20	75	5	35	36	29
South Dakota	503	10	80	10	7	47	46
Texas	195	100	--	--	98	--	2
Montana	66	87	12	1	76	13	11
California	59	100	--	--	70	29	1
All other States	64	69.2	24.2	6.6	71.7	10.5	17.8
United States	4,090	21.0	70.5	8.5	29.8	32.0	38.2

Table 7.- Soybeans for beans, harvested by specified methods and straw stored for feed, bedding, or for sale, by States, 1950 crop

#### SMALL-GRAIN STRAW

Straw is an important crop residue. Production of straw varies from year to year depending principally on the volume of grain produced, but the quantity of straw that can be readily collected for use on the farms or for sale varies with the method of harvesting. When small-grain crops are harvested with combines, more of the plant is usually left as stubble than when binders or mowers are used to cut the grain.

With the combine harvest method, the straw is dispersed over the fields and much of the chopped and short straw cannot be collected with the equipment available.

With the binder-thresher method, practically all the straw is collected as it is usually stored in stack or barn directly from the separator. When grain crops are harvested with the binder-thresher method or cut ripe and fed unthreshed, it is estimated that an average of about 20 percent of the straw is left as stubble. For small-grain crops cut ripe and fed unthreshed, it is estimated that the same percentage of the total yield of straw is recoverable as with the binder-thresher method. For the five small-grain crops included in this study, the production of recoverable straw in 1950, with normal straw-grain ratios, would have approximated 100 million tons if the entire acreage had been harvested with the binder-thresher method or cut ripe and fed unthreshed.

With the actual methods in use in 1950, production of recoverable straw is estimated at about 60 million tons. According to reports of the crop correspondents, farmers actually stored 19.7 million tons or about a third of the recoverable straw from the 1950 small-grain crops.

In 1945, it was estimated that about 33.8 million tons of straw were stored for use on farms or for sale (table 8). It is probable that changes in methods of harvesting account largely for the differences in the tonnage of straw collected in 1945 and 1950. When grain crops are harvested with the binder-thresher method, saving the straw usually involves but little additional expense as most threshers are equipped so that the straw can be stacked or piled as a part of the threshing operation.

But, with the combine method it takes extra labor and additional power and equipment to collect, process, and store the straw. Total production of recoverable straw from acreages of the five small-grain crops threshed with stationary threshers or cut ripe and fed unthreshed was estimated at about 37 million tons in 1945 and about 15 million tons in 1950.

Farmers tend to report as straw saved all of the straw stored or sold at threshing time. With the binder-thresher method, straw stored at harvest time is often far in excess of actual farm needs and market outlets. On many farms straw reported as stored in 1945 included straw that was later hauled to fields and distributed or was burned.

Table 8.- Straw stored for use on farms or for sale from principal small-grain crops, 1950 and 1945 1/

State and group	Straw stored							
	1950 crop				1945 crop			
	Percentage		Percentage		Amount		Percentage	
	Amount	Baled	With wire	Loose	Amount	Baled	With wire	Loose
	1,000 tons	Per- cent	Per- cent	Per- cent	1,000 tons	Per- cent	Per- cent	Per- cent
Northeast								
New England	63	10.0	34.8	3.1	52.1	77	5.4	94.6
New York	594	19.1	41.3	14.7	24.9	653	30.7	69.3
New Jersey	58	24.6	63.9	3.0	8.5	55	86.6	13.4
Pennsylvania	992	15.1	46.9	7.6	30.4	1,330	30.2	69.8
Delaware	37	16.8	57.9	3.5	21.8	54	35.3	64.7
Maryland	211	25.0	40.2	1.4	33.4	325	29.1	70.9
Total	1,955	17.5	44.8	8.7	29.0	2,494	30.8	69.2
Corn Belt								
Ohio	1,170	28.8	44.0	8.5	18.7	1,805	55.0	45.0
Indiana	786	30.4	51.6	6.6	11.4	1,212	61.8	38.2
Illinois	1,179	39.2	40.9	7.0	12.9	1,902	64.4	35.6
Iowa	2,470	26.0	33.2	6.0	34.8	3,131	42.0	58.0
Missouri	483	24.6	26.6	3.0	45.8	817	41.6	58.2
Total	6,088	29.6	38.6	6.5	25.3	8,867	52.1	47.9
Lake States								
Michigan	914	21.6	33.4	8.0	37.0	1,468	38.9	61.1
Wisconsin	2,075	8.4	16.8	23.0	51.8	2,945	10.7	89.3
Minnesota	2,476	14.3	36.6	4.8	44.3	5,165	15.2	84.8
Total	5,465	13.3	28.6	12.2	45.9	9,578	17.4	82.6
Great Plains								
North Dakota	1,409	9.4	20.0	9.8	60.8	2,119	4.8	95.2
South Dakota	966	6.8	21.9	3.1	68.2	2,648	6.2	93.8
Nebraska	717	15.5	13.2	2.3	69.0	1,765	11.2	88.8
Kansas	198	26.3	26.0	5.2	42.5	138	28.6	71.4
Total	3,290	11.0	19.4	5.9	63.7	6,970	8.5	91.5
Appalachian								
West Virginia	79	19.0	20.3	4.1	56.6	124	15.9	84.1
Kentucky	149	24.6	34.7	1.0	39.7	197	48.4	51.6
Tennessee	138	20.0	34.8	1.0	44.2	225	36.2	63.8
Virginia	248	21.8	21.5	2.8	53.9	107	31.2	68.8
North Carolina	140	36.0	27.6	1.0	35.4	255	46.4	53.6
Total	754	24.4	27.5	1.9	46.2	1,208	36.6	63.4
Southeast								
South Carolina	119	21.3	16.0	3.0	59.7	280	18.8	81.2
Georgia	72	16.2	13.8	1.0	69.0	232	13.7	86.3
Florida	4	20.0	5.0	2.0	73.0	8	25.0	75.0
Alabama	38	20.5	15.0	3.0	61.5	80	16.5	83.5
Total	233	19.6	15.0	2.3	63.1	600	16.6	83.4
Delta								
Mississippi	35	30.0	30.0	--	40.0	85	30.9	69.1
Louisiana	17	25.0	20.0	--	55.0	23	18.6	81.4
Arkansas	35	12.4	9.0	3.0	75.6	107	17.6	82.4
Total	87	21.9	19.6	1.2	57.3	215	23.0	77.0
Oklahoma-Texas								
Oklahoma	72	28.2	13.7	2.2	55.9	403	14.1	85.9
Texas	93	17.1	10.2	1.4	71.3	278	25.3	74.7
Total	165	21.9	11.7	1.8	64.6	681	18.7	81.3
Mountain								
Montana	475	10.5	20.9	3.3	65.3	507	2.3	97.7
Idaho	198	15.6	23.1	3.9	57.4	620	10.0	90.0
Wyoming	84	10.2	20.4	1.1	68.3	161	3.4	96.6
Colorado	221	13.3	8.6	6.4	71.7	868	8.6	91.4
New Mexico	21	42.6	22.1	3.2	32.1	32	5.7	94.3
Arizona	28	80.0	9.6	1.1	9.3	13	23.0	77.0
Utah	117	24.0	23.0	3.2	49.8	283	15.6	84.4
Nevada	10	31.0	25.5	5.0	38.5	8	24.8	75.2
Total	1,154	15.7	18.9	3.8	61.6	2,492	8.2	91.8
Pacific								
Washington	179	25.0	19.4	9.0	46.6	363	18.8	81.2
Oregon	134	31.1	18.9	6.2	43.8	185	27.0	73.0
California	152	78.5	4.3	5.5	11.7	117	74.8	25.2
Total	465	44.2	14.3	7.1	34.4	665	30.9	69.1
United States	19,656	19.8	30.5	7.8	41.9	33,770	26.0	74.0

1/ Includes wheat, oats, barley, rye, and flaxseed straw.

More than 30 percent of the straw saved in 1950 was baled with twine balers and about 20 percent with wire balers. Total straw baled from the five crops in 1950 was about 10 million tons. About 8,800,000 tons of straw were baled in 1945. More than two-thirds of the 1950 straw stored was in the Corn Belt, the Lake States, and the Northeastern States, where dairy cattle numbers are large and where winters are long and large quantities of straw are used for bedding.

In 1950, about 42 percent of the straw saved was stored or sold as loose, long straw. Until recent years, the bulk of the straw saved has been loose, long straw. As late as 1945, loose straw, both long and chopped, accounted for about 75 percent of the straw stored. Probably about 2 percent of the straw saved in 1945 was chopped. Field forage harvesters have greatly increased in numbers and in use since 1945. About 8 percent of the straw saved in 1950 was loose, chopped straw. This method of handling straw was reported in practically all States, and was especially important in Wisconsin and New York.

Although the bulk of the straw saved in recent years was for use on farms, a considerable quantity of straw is used by industrial plants; for bedding livestock in transit to market, at stock yards, in cities and towns; by highway departments, and for many other nonfarm uses. Use of straw by industrial plants has exceeded a million tons annually in most recent years.

Strawboard plants alone normally use around 800,000 tons of straw annually, chiefly wheat straw. Most of the strawboard plants are found in the Corn Belt and the Lake States. Considerable quantities of flax-seed straw are used for industrial purposes, especially by manufacturers of cigarette papers. Consumption of flaxseed straw for industrial purposes is reported to have averaged around 300,000 tons annually in recent years.

#### WHEAT STRAW

The harvested acreage of wheat in 1950 was only about 5 percent below the 1945 acreage, but the amount of wheat straw saved in 1950 for use on the farm and for sale was only slightly more than half of the tonnage estimated for 1945 (table 9). One factor that contributed to the reduction in the quantity of straw saved was the increased use of combines. About 94 percent of the wheat acreage of 1950 was harvested with combines, compared with 78 percent in 1945.

In all areas a higher percentage of the straw was baled in 1950 than in 1945. Almost 80 percent of the wheat straw stored in the Corn Belt was baled as was more than 70 percent of the wheat straw in the Northeastern States. For the entire country twine balers accounted for about 37 percent and wire balers for 25 percent of the wheat straw saved. About 32 percent of the straw was stored as loose, long straw. Storing wheat straw as loose, long straw is of above-average importance in most southern areas, in the Great Plains, and in most western States.

Table 9.- Wheat straw stored for use on farms, or for sale, by States, 1950 and 1945

State and group	Straw stored							
	1950 crop				1945 crop			
	Percentage				Percentage			
	Amount	Baled	Loose		Amount	Baled	Loose	
	1,000 tons	Per- cent	Per- cent	Per- cent	1,000 tons	Per- cent	Per- cent	Per- cent
		With wire	With twine					
				Chopped				
				Not chopped				
Northeast								
New England								
New York	225	29	48	10	13	309	41.0	59.0
New Jersey	30	27	66	3	4	35	88.8	11.2
Pennsylvania	550	15	54	7	24	842	33.3	66.7
Delaware	23	17	60	4	19	39	32.0	68.0
Maryland	143	29	37	1	33	262	30.1	69.9
Total	971	20.8	50.6	6.6	22.0	1,488	35.6	64.4
Corn Belt								
Ohio	949	31	44	8	17	1,114	57.8	42.2
Indiana	500	33	52	6	9	713	64.3	35.7
Illinois	275	53	37	4	6	342	70.0	30.0
Iowa	40	31	45	7	17	68	45.2	54.8
Missouri	195	35	29	3	33	424	40.0	60.0
Total	1,959	35.0	43.6	6.4	15.0	2,961	57.9	42.1
Lake States								
Michigan	437	24	39	8	29	721	45.6	54.4
Wisconsin	47	9	13	27	51	67	8.9	91.1
Minnesota	172	12	33	3	52	625	8.5	91.5
Total	656	19.8	35.6	8.0	36.6	1,413	27.4	72.6
Great Plains								
North Dakota	644	11	22	10	57	994	6.2	93.8
South Dakota	168	5	31	5	59	614	8.5	91.5
Nebraska	165	25	14	3	58	491	20.6	79.4
Kansas	111	32	32	3	33	253	37.6	62.4
Total	1,088	14.3	23.2	7.5	55.0	2,352	13.2	86.8
Appalachian								
West Virginia	35	30	20	3	47	78	19.3	80.7
Kentucky	65	27	45	1	27	123	58.2	41.8
Tennessee	58	20	40	1	39	120	38.6	61.4
Virginia	150	25	19	3	53	280	34.3	65.7
North Carolina	48	42	36	1	21	107	68.2	31.8
Total	356	27.3	29.5	2.1	41.1	708	42.7	57.3
Southeast - Total	11	35.4	20.3	2.1	42.2	45	43.8	56.2
Delta - Total	5	18.0	18.0	2.4	61.6	7	42.7	57.3
Oklahoma-Texas								
Oklahoma	20	25	15	5	55	164	7.1	92.9
Texas	14	20	6	3	71	51	11.8	88.2
Total	34	23.0	11.3	4.2	61.5	215	8.2	91.8
Mountain								
Montana	240	13	30	2	55	330	2.9	97.1
Idaho	102	18	27	2	53	466	10.5	89.5
Colorado	50	24	10	6	60	514	10.3	89.7
Utah	40	28	20	3	49	165	16.9	83.1
Other	23	30	16	3	51	83	6.0	94.0
Total	455	17.5	25.5	2.6	54.4	1,558	9.3	90.7
Pacific								
Washington	81	26	14	12	48	270	14.3	85.7
Oregon	53	28	17	4	51	115	19.4	80.6
California	22	80	5	5	10	41	76.9	23.1
Total	156	34.3	13.7	8.3	43.7	426	21.7	78.3
United States	5,691	24.9	36.5	6.3	32.3	11,173	31.5	68.5

About 6 percent of the wheat straw of 1950 was stored as loose, chopped straw. Some straw was handled in this way in most States, but it was above average in importance in the North Central and Northeastern States.

Of the 1945 wheat straw stored, about 31 percent was baled and the remainder was used on farms or sold as loose straw. Most of the baling in 1945 was done with wire balers as there were but few twine balers on farms at that time.

#### OAT STRAW

Oat straw is leafy and many farmers prefer it over other kinds of small-grain straw. Of the total acreage of the five small-grain crops included in the survey less than a third was in oats, but more than 60 percent of the total straw saved was oat straw.

The acreage of oats harvested for grain in 1950 was only 3 percent below the harvested acreage of 1945, but the quantity of straw saved in 1950 was about 38 percent below the quantity saved from the 1945 oat crop (table 10). Contributing to the reduction in tonnage of straw was the increased use of combines in harvesting oats. In 1945, only 38 percent of the oat acreage was harvested with combines, compared with about 67 percent for the 1950 crop.

About 46 percent of the oat straw saved for use on the farm and for sale in 1950 was baled. Only 24 percent of the 1945 oat straw was baled. About 28 percent of the 1950 straw was baled with twine balers and about 18 percent with wire balers.

More than 45 percent of the 1950 straw was stored on farms or sold as long, loose straw, and about 9 percent was loose, chopped straw. About 54 percent of the 1950 oat straw was used or sold as loose straw, compared with about 76 percent in 1945.

About 75 percent of the oat straw was stored or sold as loose straw in the Plains and Mountain States. In the Corn Belt, 63 percent of the straw was baled, and around 55 percent was baled in the Pacific Coast States.

#### BARLEY STRAW

About 11.2 million acres of barley were harvested in 1950. This was about 7 percent above the harvested acreage of 1945. Straw stored for use on farms or for sale from the 1950 barley crop is estimated at about 1,470,000 tons (table 11). This was about 30 percent less than the estimated quantity of straw saved in 1945. In 1950, about 66 percent of the acreage of barley was harvested with combines, compared with 63 percent of the 1945 acreage. The increased use of the combine probably contributed largely to the decreased quantity of barley straw stored for use on farms or for sale in 1950.

In 1945, only 11 percent of the straw was baled compared with about 44 percent in 1950. More than 26 percent of the barley straw was baled with twine balers. Use of these balers is especially important in the

Table 10.- Oat straw stored for use on farms or for sale, 1950 and 1945 crops harvested for grain

State and group	Straw stored									
	1950 crop					1945 crop				
	Baled		Percentage			Baled		Percentage		
	Amount	With wire	With twine	Chopped	Not chopped	Amount	Baled	With Loose	With chopped	Percent
Northeast	1,000 tons	Per- cent	Per- cent	Per- cent	Per- cent	1,000 tons	Per- cent	Per- cent	Per- cent	Per- cent
New England	61	10.0	35.0	3.0	52.0	74	4.9	95.1		
New York	333	13.0	37.0	18.0	32.0	294	18.6	81.4		
Pennsylvania	325	12.0	34.0	9.0	45.0	385	21.6	78.4		
Other	40	17.4	49.3	2.6	30.7	30	39.6	60.4		
Total	759	12.6	36.2	12.1	39.1	783	19.6	80.4		
Corn Belt										
Ohio	206	19.0	44.0	11.0	26.0	372	44.2	55.8		
Indiana	263	25.0	51.0	8.0	16.0	469	57.9	42.1		
Illinois	884	35.0	42.0	8.0	15.0	1,539	63.2	36.8		
Iowa	2,400	26.0	33.0	6.0	35.0	3,038	41.9	58.1		
Missouri	270	17.0	25.0	3.0	55.0	365	44.4	55.6		
Total	4,023	27.0	36.2	6.6	30.2	5,783	49.2	50.8		
Lake States										
Michigan	422	19.0	29.0	8.0	44.0	662	32.9	67.1		
Wisconsin	1,860	8.0	17.0	23.0	52.0	2,726	10.9	89.1		
Minnesota	1,836	14.0	37.0	5.0	44.0	3,782	12.3	87.7		
Total	4,118	11.8	27.2	13.4	47.6	7,170	13.6	86.4		
Great Plains										
North Dakota	510	7.0	16.0	11.0	66.0	686	2.2	97.8		
South Dakota	622	7.0	20.0	3.0	70.0	1,535	3.4	96.6		
Nebraska	485	13.0	13.0	2.0	72.0	1,020	8.3	91.7		
Kansas	75	18.0	18.0	8.0	56.0	141	19.2	80.8		
Total	1,692	9.2	16.7	5.4	68.7	3,382	5.3	94.7		
Appalachian										
West Virginia	35	10.0	17.0	5.0	68.0	37	10.9	89.1		
Kentucky	59	20.0	20.0	1.0	59.0	37	12.4	87.6		
Tennessee	72	20.0	30.0	1.0	49.0	80	32.9	67.1		
Virginia	57	17.0	25.0	2.0	56.0	69	20.0	80.0		
North Carolina	82	33.0	23.0	1.0	43.0	131	27.3	72.7		
Total	305	21.8	23.8	1.6	52.8	354	23.9	76.1		
Southeast										
South Carolina	110	20.0	15.0	3.0	62.0	253	15.6	84.4		
Georgia	67	15.0	14.0	1.0	70.0	211	11.4	88.6		
Other	41	20.0	14.0	3.0	63.0	84	15.9	84.1		
Total	218	18.5	14.5	2.4	64.6	548	14.0	86.0		
Delta										
Mississippi	34	30.0	30.0	--	40.0	83	30.8	69.2		
Louisiana	17	25.0	20.0	--	55.0	23	18.6	81.4		
Arkansas	30	12.0	8.0	3.0	77.0	99	15.7	84.3		
Total	81	22.3	19.8	1.1	56.8	205	22.1	77.9		
Oklahoma-Texas										
Oklahoma	49	30.0	13.0	1.0	56.0	229	19.4	80.6		
Texas	74	15.0	11.0	1.0	73.0	222	28.6	71.4		
Total	123	21.0	11.8	1.0	66.2	451	23.8	76.2		
Mountain										
Montana	152	8.0	12.0	5.0	75.0	90	1.7	98.3		
Idaho	49	9.0	17.0	6.0	68.0	68	6.7	93.3		
Wyoming	39	10.0	30.0	1.0	59.0	60	2.8	97.2		
Colorado	83	10.0	7.0	5.0	78.0	106	6.6	93.4		
Utah	27	25.0	15.0	2.0	58.0	27	12.8	87.2		
Other	16	46.6	23.4	2.3	27.7	13	11.2	88.8		
Total	366	11.7	14.2	4.4	69.7	364	5.4	94.6		
Pacific										
Washington	73	25.0	24.0	6.0	45.0	68	36.8	63.2		
Oregon	50	34.0	22.0	10.0	34.0	46	45.5	54.5		
California	27	63.0	7.0	7.0	23.0	24	48.7	51.3		
Total	150	34.8	20.3	7.5	37.4	138	42.0	58.0		
United States	11,835	17.5	28.3	8.8	45.4	19,178	23.7	76.3		

Table 11.- Barley straw stored for use on farms or for sale, by States  
1950 and 1945

State and group	Straw stored							
	1950 crop				1945 crop			
	Percentage				Percentage			
	Amount:	Baled	Loose		Amount:	Baled	Loose	
	With wire	With twine	Chopped	Not chopped				
	1,000 tons	Per- cent	Per- cent	Per- cent	1,000 tons	Per- cent	Per- cent	
Northeast								
New York	31	14	38	15	33	42	37.5	62.5
Pennsylvania	108	24	50	6	20	70	38.8	61.2
Maryland	41	17	50	2	31	35	27.6	72.4
Other	16	19	56	4	21	9	53.4	46.6
Total	196	20.5	48.6	6.4	24.5	156	36.8	63.2
Corn Belt								
Total	48	26.4	41.0	5.8	26.8	33	38.4	61.6
Lake States								
Michigan	37	19	25	8	48	52	23.9	76.1
Wisconsin	129	12	17	25	46	86	8.8	91.2
Minnesota	244	12	42	6	40	193	5.1	94.9
Total	410	12.6	32.6	12.2	42.6	331	9.0	91.0
Plains States								
North Dakota	168	7	20	8	65	336	2.1	97.9
South Dakota	93	5	16	1	78	339	2.9	97.1
Other	41	11	12	4	70	176	3.2	96.8
Total	302	7.3	17.7	5.3	69.7	851	2.6	97.4
Appalachian								
Total	75	20.0	32.9	2.4	44.7	85	33.9	66.1
Southern States								
Total 1/	10	31.7	15.1	3.0	50.2	17	20.3	79.7
Mountain States								
Montana	81	8	11	4	77	80	1.0	99.0
Idaho	46	17	21	6	56	85	8.9	91.1
Wyoming	32	10	10	1	79	41	1.1	98.9
Colorado	86	10	9	8	73	233	5.8	94.2
Utah	49	20	30	4	46	87	14.7	85.3
Other	31	67	14	2	17	14	19.7	80.3
Total	325	17.4	14.9	4.9	62.8	540	7.0	93.0
Pacific								
California	67	79	4	8	9	31	80.0	20.0
Other	39	27	22	6	45	39	23.6	76.4
Total	106	59.9	10.6	7.3	22.2	70	48.6	51.4
United States	1,472	18.0	26.3	7.3	48.4	2,083	10.9	89.1

1/ Includes the Southeastern States, the Delta States, Oklahoma, and Texas.

Northeastern States and the Corn Belt. Around one-sixth of the 1950 barley straw was baled with wire balers and about 7 percent was stored or sold as loose, chopped straw. About 48 percent of the 1950 barley straw was stored or sold as loose, long straw. This was an important method of handling straw especially in the Plains and Mountain States.

#### RYE STRAW

The 1950 harvested acreage of rye was only slightly less than the 1945 acreage, but the amount of straw stored from the 1950 crop was about 40 percent less than the tonnage stored in 1945. As is the case with other grain crops, an important factor contributing to this decrease in the storing of straw was the increased use of the combine. About half of the 1945 acreage of rye was harvested with combines, compared with about three-fourths of the 1950 acreage.

Of the straw saved, about 47 percent was baled in 1950 and about 23 percent in 1945 (table 12). Almost a third of the 1950 straw was baled with twine balers.

The Lake and the Plains States together accounted for about two-thirds of the rye straw. In these States more than half of the rye straw was used on farms or sold as long, loose straw. Of the total rye straw about 5 percent was stored as loose, chopped straw.

#### FLAXSEED STRAW

The harvested acreage of flaxseed in 1950 was 8 percent above the 1945 acreage, but the tonnage of straw stored for use on the farm or for sale from the 1950 crop was less than half of the 1945 tonnage.

More than half of the 1950 straw saved was in Minnesota, with North Dakota, South Dakota, and California accounting for most of the remaining tonnage (table 13).

Flaxseed straw is used in the manufacture of cigarette paper. Annual domestic consumption for this purpose is reported in recent years to have exceeded 300,000 tons. Although only 53 percent of the 1950 flaxseed straw stored for use on farms or for sale was baled, it is likely that a considerable tonnage of loose straw was sold by farmers for industrial use and baled by the purchasers before shipment.

#### SOYBEAN STRAW

The acreage of soybeans harvested for beans in 1950 was about 13.8 million acres. From this acreage reports of crop correspondents indicate that about 160,000 tons of straw were stored (table 7). This was an average of a ton of straw per 87 acres of soybeans harvested. About two-thirds of the soybean straw saved was in the Corn Belt. Substantially more than half of the straw was baled. Use of twine balers was especially important in the Corn Belt. It has been estimated that about 50,000 tons of soybean straw are used by strawboard plants most of which are located in the Corn Belt and the Lake States.

Table 12.- Rye straw stored for use on farms or for sale, by States, 1950 and 1945

State and group	Amount	Straw stored						Amount	1,000 tons	Per- cent	1,000 tons	Per- cent					
		1950 crop			1945 crop												
		Baled	With twine	Loose	Chopped	Not chopped	Loose										
Northeast	29	19.2	49.8	5.7	25.3	67	40.9	59.1	58.4	41.6							
Corn Belt	43	33.4	44.1	3.4	19.1	70											
Lake States																	
Michigan	17	28.0	18.0	7.0	47.0	32	37.0	63.0	5.8	94.2							
Wisconsin	37	14.0	11.0	8.0	67.0	62			12.5	87.5							
Minnesota	69	8.0	40.0	5.0	47.0	81											
Total	123	12.6	28.2	6.2	53.0	175			14.6	85.4							
Plains States																	
South Dakota	55	9.0	31.0	2.0	58.0	73			6.5	93.5							
Nebraska	36	10.0	15.0	3.0	72.0	118			6.4	93.6							
Other	19	10.8	30.0	9.9	49.3	8			18.3	81.7							
Total	110	9.7	25.6	3.7	61.0	199			6.9	93.1							
Southern Mountain Pacific	21 8 19	29.2 21.6 30.5	28.1 18.8 15.0	1.6 3.7 5.6	41.1 55.9 48.9	68 24 11			41.8 8.6 19.8	58.2 91.4 80.2							
United States	353	16.9	30.2	4.7	48.2	614			22.8	77.2							

1/ Includes the Appalachian States, the Southeastern States, Oklahoma, and Texas.

Table 13.- Flaxseed straw stored for use on farms or for sale, by States, 1950 and 1945

State	Straw stored						1945 crop		
	1950 crop			Percentage			Percentage		
	Amount	Baled	With wire	With twine	Loose	Not chopped	Amount	Baled	Loose
	1,000 tons	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	1,000 tons	Per- cent	Per- cent
Minnesota	155	27.0	26.0	2.0	45.0	484	50.7	50.7	49.3
North Dakota	69	18.0	28.0	4.0	50.0	97	17.6	17.6	82.4
South Dakota	28	15.0	11.0	3.0	71.0	88	52.8	52.8	47.2
California	34	90.0	2.0	--	8.0	19	96.3	96.3	3.7
All other States <sup>1/</sup>	19	23.6	28.1	4.7	43.6	34	27.2	27.2	72.8
United States	305	30.7	22.5	2.5	44.3	722	46.6	46.6	53.4

1/ Includes Texas, Iowa, Montana, Kansas, Arizona, Wisconsin, Michigan, Oklahoma, Missouri, and Illinois.